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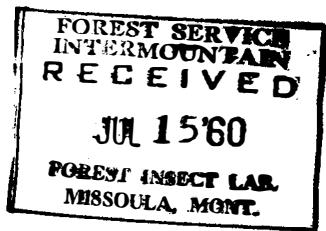
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REPORT ON EUROPEAN PINE SHOOT MOTH SURVEY
IN SPOKANE AND PULLMAN, WASHINGTON
JUNE 1960

By P. W. Orr

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REPORT ON EUROPEAN PINE SHOOT MOTH SURVEY
IN SPOKANE AND PULLMAN, WASHINGTON--JUNE 1960

By

P. W. Orr

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Forest Service
U. S. Department of Agriculture

SUMMARY

Nurseries, sales yards, ornamental plantings, and native ponderosa pine stands in Spokane, Wash., and vicinity were examined during the period June 13-18, 1960 for the European pine shoot moth. Infestations were observed at one nursery and in one ornamental planting, both of which had previously been recorded. Two forest tree nurseries near Pullman, Wash., also were examined for evidence of the shoot moth, but none was found.

JOHNSON
KEITH
NELSON

DENTON
DODGE
TELLIN
TERRELL
VNOCK

INTRODUCTION

In Spokane, Wash., the European pine shoot moth was discovered in April 1960 on mugho pine in an ornamental nursery by a State Department of Agriculture inspector. Subsequently an employee of the nursery found the moth in an ornamental planting of mugho pine in Opportunity, Wash., a suburb of Spokane. These findings prompted the Northwest Forest Pest Action Council to sponsor a survey to determine the feasibility of eradicating the moth from the Spokane area and thus preventing its establishment and spread in ponderosa pine forests.

The survey was made during the period June 13-18 by the writer and Torolf Torgersen of the Pacific Northwest Forest and Range Experiment Station. Two nurseries near Pullman, Wash., also were examined during this period, thus completing the Station's checking of forest nurseries in Washington and Oregon.

SURVEY PROCEDURE

At each nursery all the buds and new shoots on hard pines from about 1 foot to 8 feet tall were examined for evidence of the European pine shoot moth. On larger trees, only the buds and shoots on the accessible lower branches were examined. Beds of transplant and liner stock were checked over all, and then detailed examinations of individual trees were made at 10-foot to 25-foot intervals along the beds. An attempt was made to contact each nurseryman to determine the source of the pine stock.

Hard pines at all known sales yards, including grocery stores, garden stores, etc., were checked to determine whether the European pine shoot moth was present. At these outlets the manager was interviewed to determine who supplied the stock offered for sale.

Ornamental plantings in newer residential sections of Spokane were spot-checked by driving along representative streets and stopping to examine readily accessible pines. Recent pine plantings around public buildings and along U. S. 10 Freeway were checked tree by tree. In most cases it was possible to learn the name of the landscaper and his supplier.

Native ponderosa pine of all sizes are growing in many sections of the city, making a tree by tree examination for the shoot moth a monumental undertaking. For this reason, only a few representative stands, chosen because of their proximity to the known infestations or possible sources of infestation were examined. On the sample areas a general inspection was made, and on selected trees all the buds and new shoots on small trees and the lower branches of larger trees were examined for evidence of the European pine shoot moth.

SPOKANE AREA

Nurseries and Sales Yards

In the 23 nurseries and sales yards examined (table 1), the European pine shoot moth was seen only at one nursery--Krause Nursery, Inc., where it was first detected in the city. The moth evidently was brought into this nursery on infested stock from Strander's Nursery in Seattle, Wash., about 1958. Presumably three generations of adults from the infested stock in the Krause Nursery have laid their eggs in Spokane, making spread to ponderosa pine a definite possibility. During the June survey, live pupae were found in the nursery despite an intensive program of clipping, hand picking, and spraying for control.

With the exception of the larger wholesale growers, most suppliers of ornamental stock in the Spokane area import only enough pines to supply the current season's needs. Very little ornamental pine in Spokane is grown there from seed; most is imported as liner stock or older plants from a variety of suppliers, both in the East and the West.

Table 1.--Nurseries or sales yards examined for
the European pine shoot moth.

| Nursery or sales yard : | Location : | Pine species examined : | Origin of stock : |
|-------------------------|--------------|---------------------------------|--|
| C. Norb. Balzer | Spokane, Wn. | Mugho | Unknown |
| Ed. Balzer Nurseries | " " | Mugho Bristle cone | Unknown Unknown |
| City of Spokane Nursery | " " | Mugho | Spokane, Wn. |
| Falco and Sons Produce | " " | Mugho | Corbett, Oreg. |
| Farmer's Market (No.1) | " " | Mugho | Corbett, Oreg. |
| Farmer's Market (No.2) | " " | Mugho | Corbett, Oreg. |
| Gothmann Greenhouse | " " | Mugho Mugho | Tacoma, Wn. Haugen, Mont. |
| Hembree's Nursery | " " | Scotch Mugho Bristle cone | Spokane, Wn. Forest Grove, Oreg. Unknown |
| Inland Empire Nursery | " " | Mugho Scotch | Unknown Unknown |
| Janish and Sons | " " | No pines | - |

Table 1.--Nurseries or sales yards examined for
the European pine shoot moth (Cont'd.)

| Nursery or sales yard | Location | Pine species examined | Origin of stock |
|-----------------------------------|-----------------|-----------------------|---------------------------------|
| *Krause Nursery | Spokane, Wn. | Mugho | Seattle, Wn. |
| | | Scotch | Monroe, Wn., or Kent, Wn. |
| | " " | Mugho | Yakima, Wn. |
| | | Austrian black | Portland, Oreg. Bothell, Wn. |
| | " " | Scotch | Minnesota |
| | | Mugho | Minnesota |
| | | Japanese red(?) | Unknown |
| | | Piñon | Seed |
| | Millwood, Wn. | Mugho | Pennsylvania |
| | | Scotch | Pennsylvania |
| | | Austrian black | Pennsylvania |
| Northwest Seed and Insecticide | Spokane, Wn. | No pines | - |
| Northwest Spray and Nursery | " " | Mugho | Monrovia, Calif. |
| Norvell Greenhouses | Greenacres, Wn. | Scotch | Yakima, Wn. |
| | | | Indiana, Penn. |
| Parrish and Sells Flowers | Spokane, Wn. | No pines | - |
| Renfro's Gardens | Dishman, Wn. | Mugho | Spokane, Wn. |
| Ritters Northside Store | Spokane, Wn. | Mugho (liners) | Portland, Oreg. |
| | | Mugho (large) | Unknown |
| Riverside Nursery | " " | Mugho (2 yr.) | Haugen, Mont. |
| | | Mugho (4 yr.) | Michigan |
| Terrace Nursery | Spokane, Wn. | Mugho | Unknown |
| Walt's 3rd Avenue Nursery | " " | Mugho | Mt. Vernon and Yakima, Wn. |

* European pine shoot moth present.

Ornamental Plantings

The only infestation of the European pine shoot moth seen in ornamental plantings was one previously detected at the Hazen and Jaeger Funeral Home in Opportunity, Wash. (table 2). There a 350-foot mugho pine hedge, planted with stock from Strander's Nursery in Seattle, remained heavily infested despite efforts to eliminate the moth by pruning infested shoots. At the time of the examination about one-half of the brood had emerged as adults and the remainder of the population was in the pupal stage.

Plantings near the Memorial Stadium, Lincoln Park, Manito Park, and Shadle Park and in residential areas in the southeast, southwest, and northwest sections were checked for signs of infestation. It is in these areas that infestation is most likely to occur by the introduction of infested plants. In these areas mugho pine, Scotch pine, and Austrian black pine are the favored decorative species, and they are among the preferred hosts of the shoot moth.

From this survey it appears that the shoot moth is not yet generally established in ornamental plantings in Spokane. If eradication were undertaken, it would be necessary to make a block-by-block house-by-house survey for detection and removal of infested trees. Such a survey would be an integral part of the eradication program. It would be very time consuming and no doubt would have to be repeated for several successive years.

Table 2.--Principal ornamental plantings in Spokane, Wash., examined for the European pine shoot moth

| Location | : Pine species : | Supplier |
|---|------------------|---|
| Clinic Center Motel | Mugho | Krause Nursery (1958) |
| Colmstock Hotel | Mugho | Unknown |
| *Hazen and Jaeger Funeral Home | Mugho | Krause Nursery by direct shipment from western Washington (1958?) |
| Inland Empire Paper Co. | Mugho | Hembree's Nursery (1957) |
| Maple Street Bridge Approach | Mugho | Krause and Stanek Nursery (1958?) |
| Millwood Branch, Seattle First Nat'l. Bank | Mugho | Unknown |

Table 2.--Principal ornamental plantings in Spokane, Wash.,
examined for the European pine shoot moth (Cont'd.).

| Location | : Pine species : | Supplier |
|--|------------------|--------------------------|
| Rockwood Clinic | Mugho | Krause (1958?) |
| Rutherford's xxx Restaurant, Sprague Ave. | Mugho | Unknown |
| St. Peter's School | Mugho | Unknown (1959?) |
| Spokane Coliseum | Mugho | ? Krause (1958?) |
| Stock Exchange | Mugho | Unknown |
| U.S. 10 Freeway, Altmont St. | Mugho | ? Stanek Nursery (1958?) |

* European pine shoot moth infestation present.

Native Ponderosa Pine Stands

Because of the prevalence of native ponderosa pine in Spokane and vicinity, a tree by tree inspection would have been impractical. For this reason, six representative stands were chosen because of their proximity to the known sources of infestation or possible sources of infestation. No evidence of shoot moth was found.

The native ponderosa pine stands checked in the Spokane area were as follows:

1. South of Calkin's Air Terminal on North Division

Scattered ponderosa pine reproduction 5 feet to 20 feet tall. Pine resin midge, black pine needle scale, and pine needle scale damage was noted. Some tree mortality in this area is probably attributable to scale damage.

2. Riverside State Park

Natural stand of ponderosa pine of all age classes. Some pine needle scale and light pine resin midge noted. Also, an unknown web spinning sawfly was fairly common on the reproduction but had not caused appreciable damage to the foliage.

3. Manito Park

Scattered open-grown ponderosa pine and saplings. Some pine needle scale was present.

4. J. A. Finch Arboretum

Small groups of natural ponderosa pine saplings from 10 feet to 40 feet tall. Pine needle scale was moderately heavy on most trees but most severe on shaded ones.

5. Pines Road Overpass, U. S. 10 Freeway

This native pine stand of mature trees and reproduction about one-quarter mile northeast of the Hazen-Jaeger Funeral Home, was examined because of its proximity to known infestation. Damage caused by the pine resin midge was evident on shaded branches and reproduction. One colony of Neodiprion sawflies was collected.

6. Upriver Drive at Havana St.

Natural stand of ponderosa pine, ranging in size from reproduction to mature trees. An unknown lepidopterous needle tier was common, but not abundant, on the younger trees in this area. Pine needle scale was prevalent on most smaller trees.

PULLMAN AREA

Nurseries

According to plan ^{1/} two forest tree nurseries at Pullman, Wash., were examined for evidence of the European pine shoot moth. These were the Washington State University Nursery and the Soil Conservation Service Nursery. Neither is in production, but both have some pine stock in the seed beds or as test plantings. Table 3 lists the species of pines examined. This completes the first cycle of examinations of forest tree nurseries and arboreta in Oregon and Washington. ^{2/}

^{1/} Orr, P. W. Plan for European pine shoot moth survey - 1960. Multilithed. April 15, 1960.

^{2/} Orr, P. W. and W. H. Klein. Report of European Pine Shoot Moth Survey - Spring 1960. Multilithed. May 23, 1960.

Table 3.--Nurseries examined near Pullman, Wash., for European pine shoot moth

| Nursery | : Location | : Pine species examined | : Origin of stock |
|---|--------------|--|------------------------------|
| Soil Conservation Service | Pullman, Wn. | Ponderosa pine Scotch pine Austrian black pine | Seed Seed Seed |
| Washington State University School of Forestry | Pullman, Wr. | Mugho (seedling) Mugho (3 - 1) Cluster pine Scotch pine | Seed Seed Seed Seed |

Ornamental plantings

Ornamental and windbreak pines on the Washington State Experiment Station grounds at Pullman, Wash., were examined for European pine shoot moth, but none was found. Ornamental mugho pines and Scotch pines on Washington State University Campus also were examined without finding any evidence of the shoot moth.